Wireless Communications for Traffic Signal Systems

2006 Traffic Engineering Conference for Operations and Safety

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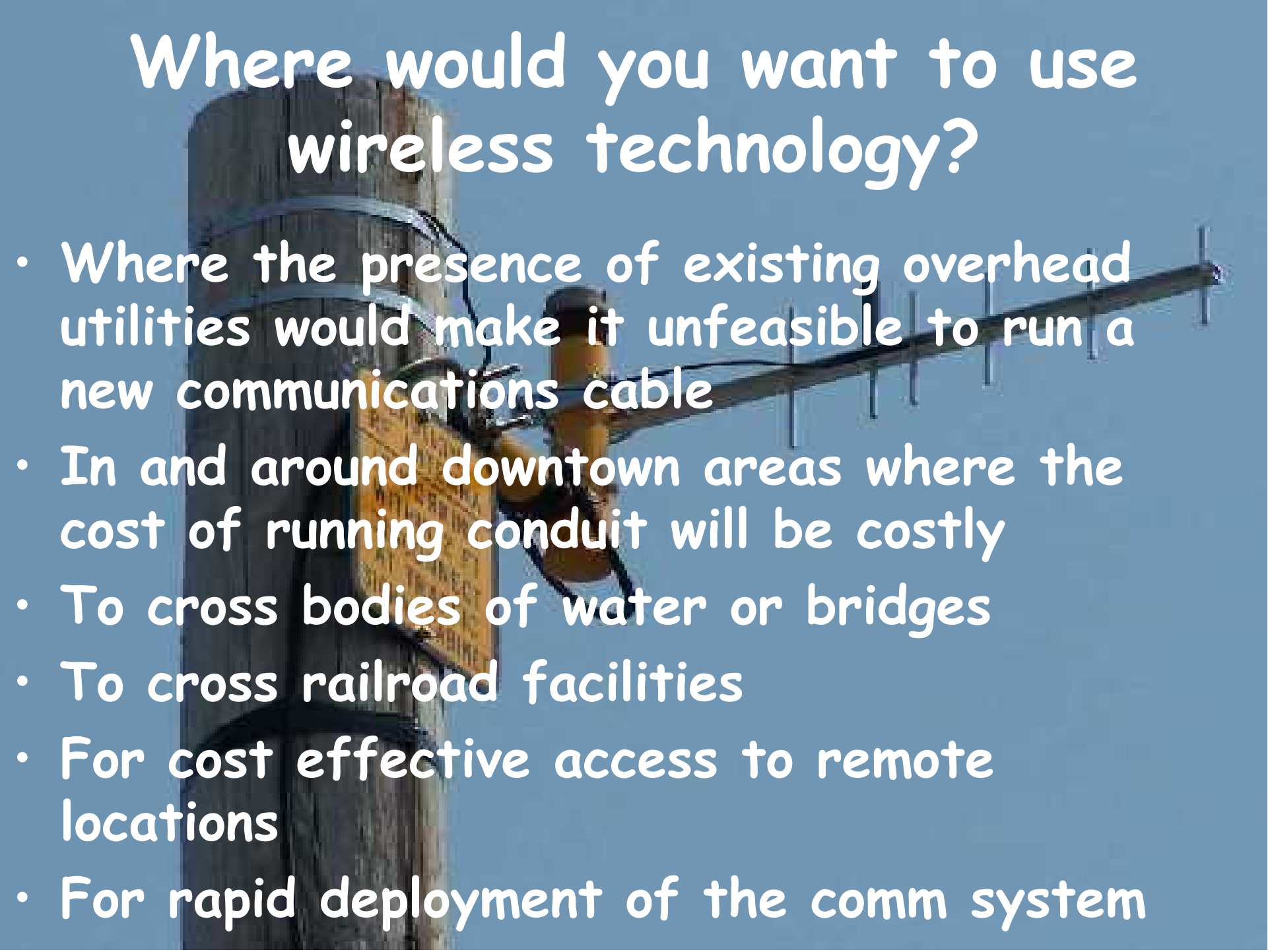
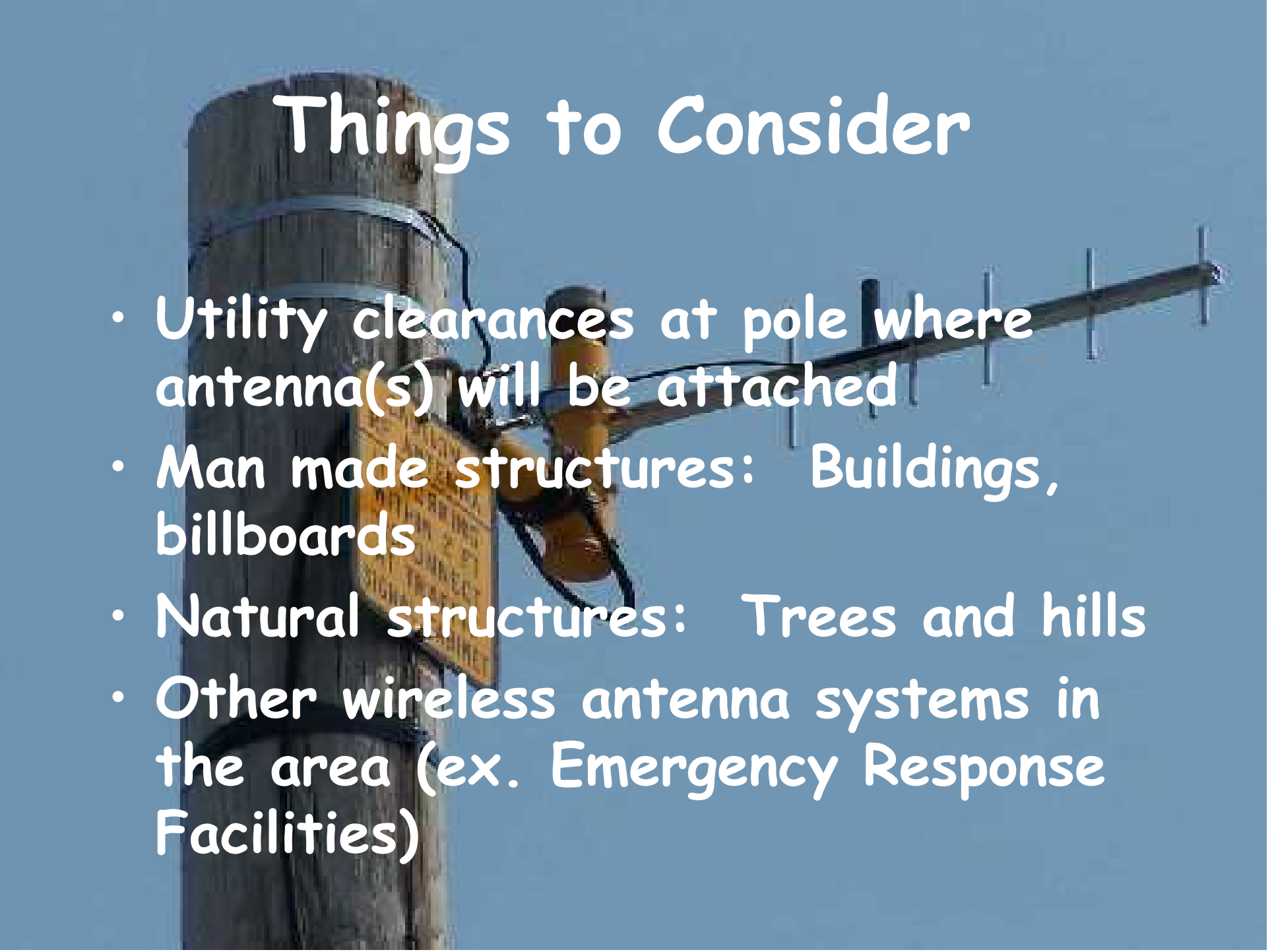
ITS & Signals Unit

Where would you want to use wireless technology?



- Where the presence of existing overhead utilities would make it unfeasible to run a new communications cable
- In and around downtown areas where the cost of running conduit will be costly
- To cross bodies of water or bridges
- To cross railroad facilities
- For cost effective access to remote locations
- For rapid deployment of the comm system

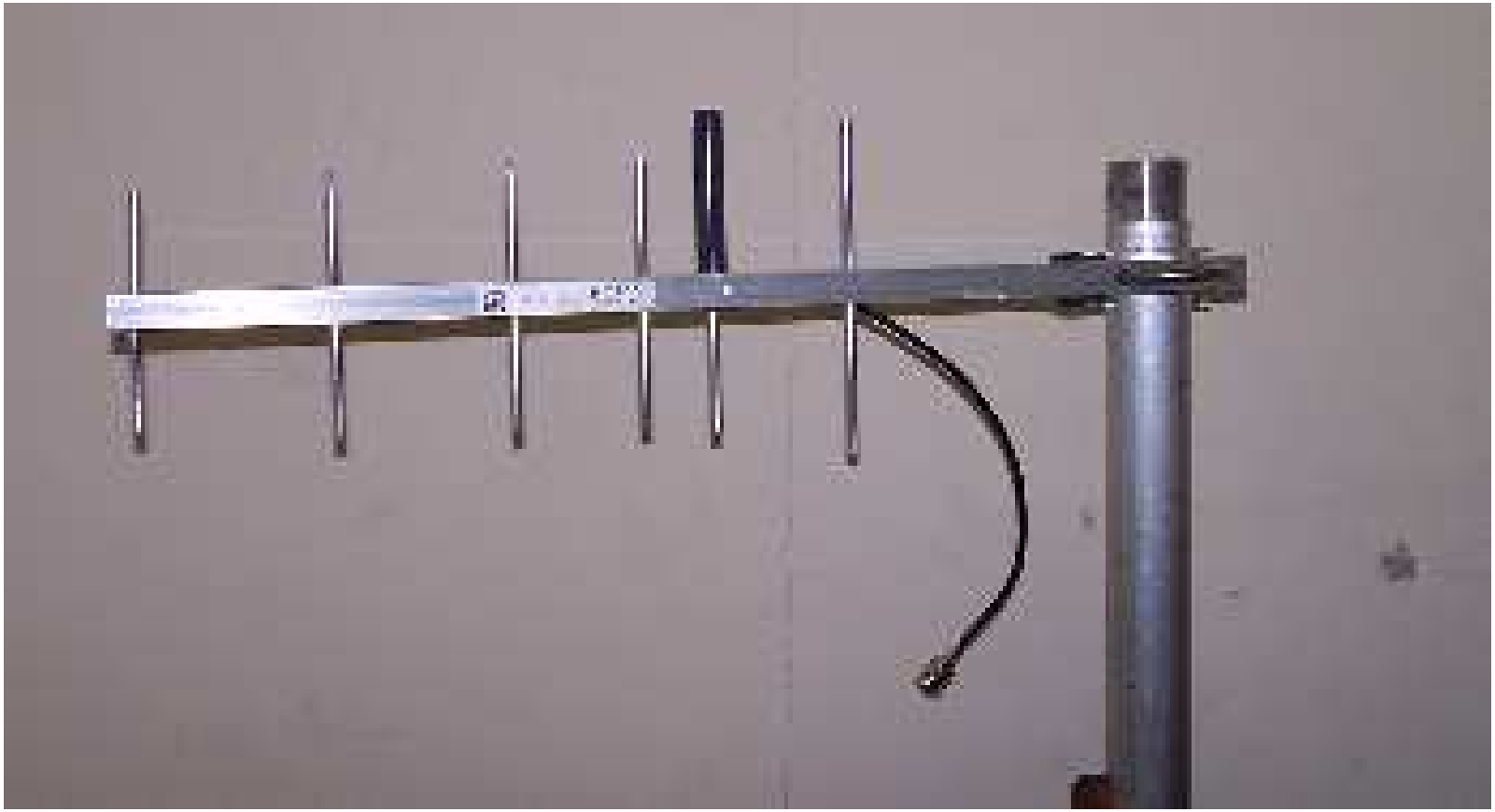


Things to Consider

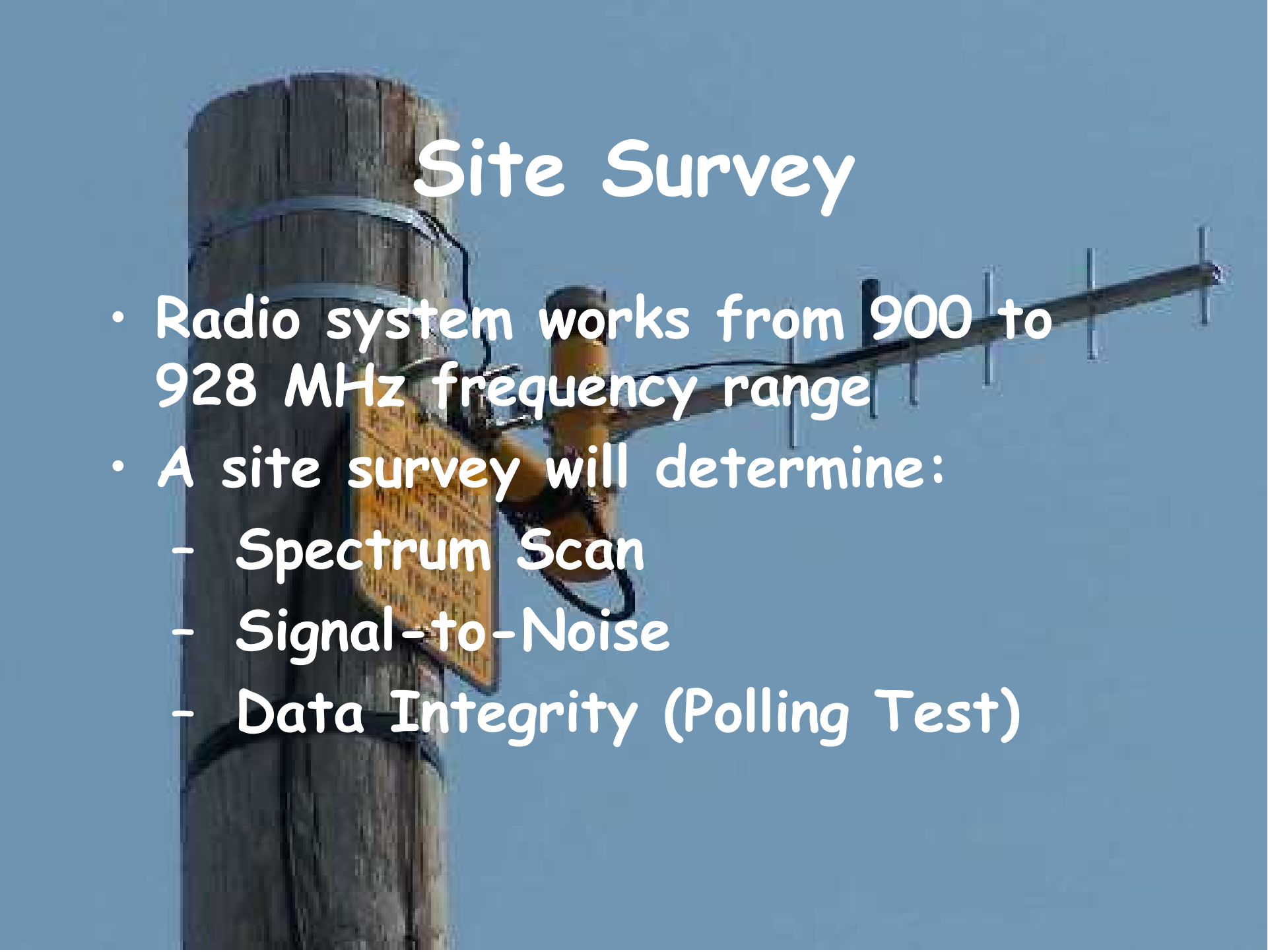
- Utility clearances at pole where antenna(s) will be attached
- Man made structures: Buildings, billboards
- Natural structures: Trees and hills
- Other wireless antenna systems in the area (ex. Emergency Response Facilities)

OMNI DIRECTIONAL ANTENNA

YAGI ANTENNA (VERTICAL POLARIZATION)



YAGI ANTENNA (HORIZONTAL POLARIZATION)



Site Survey

- Radio system works from 900 to 928 MHz frequency range
- A site survey will determine:
  - Spectrum Scan
  - Signal-to-Noise
  - Data Integrity (Polling Test)

TYPICAL SITE SURVEY

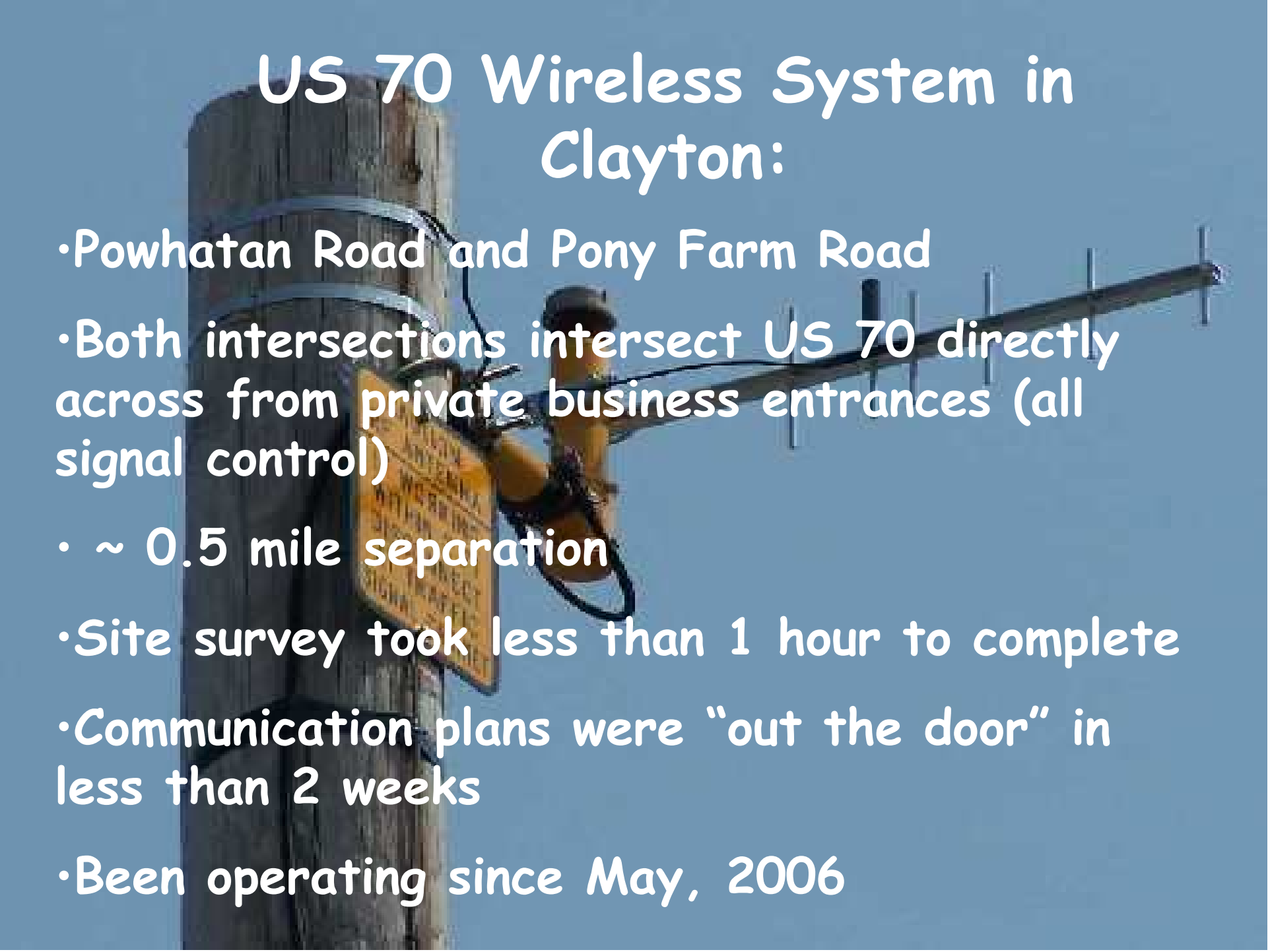
Proposed Master

A Little Help from our Friends

Site Survey

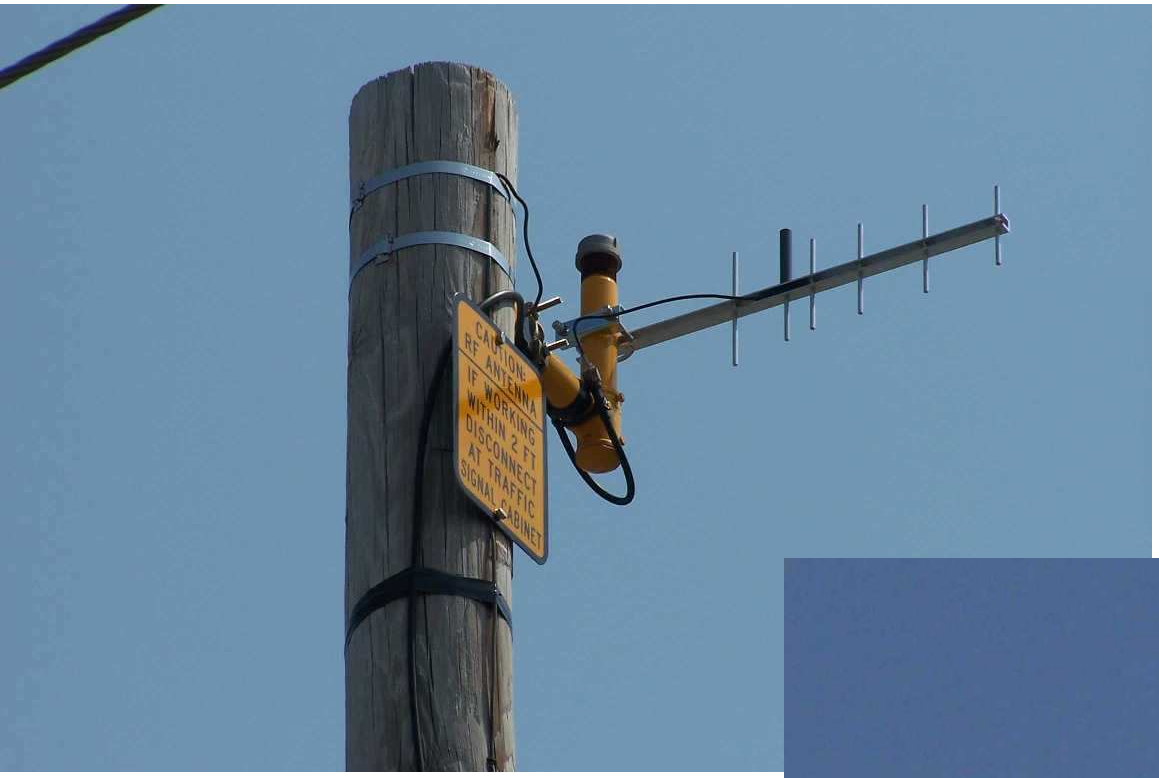
TEST EQUIPMENT FOR SURVEY

US 70 Wireless System in Clayton:



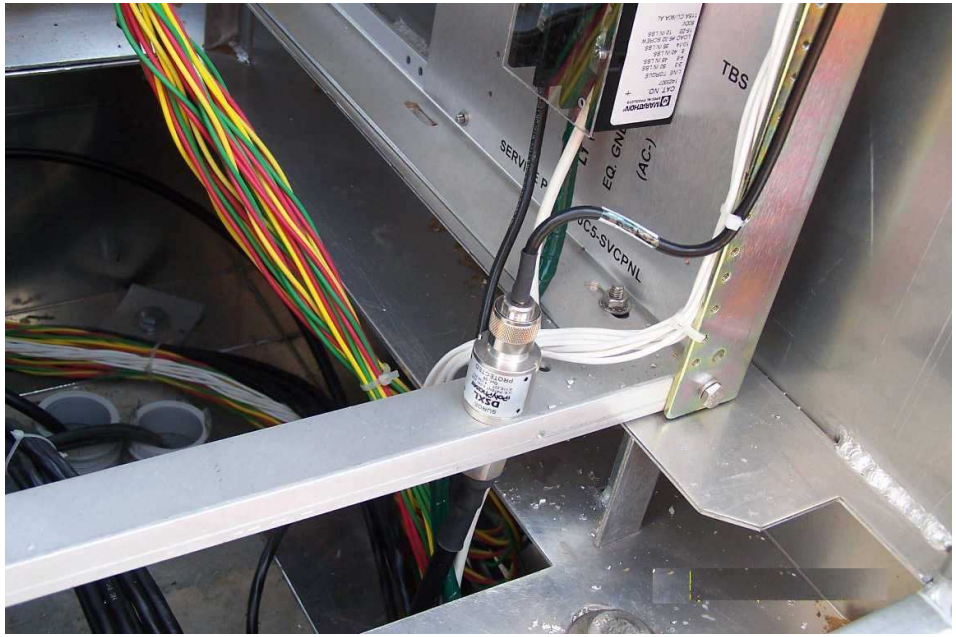
- Powhatan Road and Pony Farm Road
- Both intersections intersect US 70 directly across from private business entrances (all signal control)
- ~ 0.5 mile separation
- Site survey took less than 1 hour to complete
- Communication plans were "out the door" in less than 2 weeks
- Been operating since May, 2006

Installed Antenna



Warning Sign

Lightning Arrestor



Disconnect switch and decal on cabinet

Downloading Driver to Radio Modem

COST

- Average material cost < $2,500
- Additional cost items to consider:
  * 2 inch riser for coaxial cable
  * Conduit entrance into cabinet base
  * Power strip
  * Signs and Decals
  * Disconnect switch, etc.
- Utility adjustments or possible pole change out (identify in the LUMP prep)

Currently

- Equipment bids opened on July 13, 2006
- Bid awarded on August ##,2006
- Most everything you need to support a wireless traffic signal system will be available from the Depot

Future DOT Employees

(Note 2 observers while one person is working)

Future DOT Manager